a gate region surrounding at least a part of the channel region via an insulation film, the gate region formed of a p+-type semiconductor;

a source region having the second conductive type provided on the channel region, the source region is located substantially at a center of the channel region, and the source region is isolated from the insulation film; and

a source electrode connected to the source region,

wherein a depletion layer is formed over most of the entire channel region when a predetermined voltage is applied to the gate region.

4. (Amended) The semiconductor device according to claim 1, further comprising a semiconductor region formed of a p+-type semiconductor and provided between the channel region and the source [region] electrode

12. (Three Times Amended) A semiconductor device comprising:

[a substrate having a first conductive type;

a drift region having the first conductive type and disposed on the substrate;

a channel region having a second conductive type different from the first conductive type and provided on the drift region;

a gate region provided so as to surround at least the channel region via an insulation film; and

a source region having the [second] 1st conductive type and provided on the channel region, the source region is located substantially at a center of the channel region, and the source region is isolated from the insulation film, wherein:

an impurity concentration of the channel region is equal to or less than an impurity concentration in the drift region, and a depletion layer forms over the entire channel region sandwiched between the gate region when a zero bias is applied to the gate region.]

Please add new claims 20-30 as follow:

20. (New) A bipolar semiconductor device comprising:

a drain electrode;

a drain region having a first conductive type and disposed on the drain electrode;

a drift region having a second conductive type different from the first conductive type and disposed on the drain region;

a channel region having the second conductive type and disposed on the drift region;

a gate region surrounding at least a part of the channel region via an insulation film, the gate region having the first conductive type;

a source region having the second conductive type provided on the channel region, the source region is located substantially at a center of the channel region, and the source region is isolated from the insulation film; and

a source electrode connected to the source region,

wherein at least a part of the source electrode forms a Schottky junction with the channel region.

21. (New) A bipolar semiconductor device comprising:

a drain electrode;

a drain region having a first conductive type and disposed on the drain electrode;

a drift region having a second conductive type different from the first conductive type and disposed on the drain region;

a channel region having the second conductive type and disposed on the drift region;

a gate region surrounding at least a part of the channel region via an insulation film, the gate region having the first conductive type;

a source region having the second conductive type provided on the channel region, the source region is located substantially at a center of the channel region, and the source region is isolated from the insulation film;

a source electrode connected to the source region; and

a semiconductor layer having the second conductive type located between the source region and the source electrode, the semiconductor layer including an end face extended to a position covering at least a portion of the gate region.

22. (New) The semiconductor device according to claim 12, wherein:

the gate region has the first conductive type; and

a depletion region is formed over most of the entire channel region when a predetermined voltage is applied to the gate region.

23. (New) The semiconductor device according to claim 22, further comprising a semiconductor region having the first conductive type disposed between the channel region and the source electrode.

24. (New) The semiconductor device according to claim 12, wherein at least a part of [the source electrode] forms a Schottky junction with the channel region.

25. (New) The semiconductor device according to claim 22, wherein at least a part of [the source electrode] forms a Schottky junction with the channel region.

26. (New) The semiconductor device according to claim 12, further comprising a semiconductor layer having the second conductive type located between the source region and

the source electrode, the semiconductor layer including an end face extended to a position covering at least a portion of the gate region.

27. (New) The semiconductor device according to claim 26, wherein a thickness of the insulation film formed on an upper portion of the gate region is thicker than a thickness of the insulation film formed on a side portion of the gate region.

28. (New) The semiconductor device according to claim 26, further comprising an insulation film located between the semiconductor layer and the source electrode and having an opening portion for the semiconductor layer and the source electrode to contact, wherein a width of the opening portion is wider than a distance of the gate region.

29. (New) The semiconductor device according to claim 27, further comprising an insulation film located between the conductive layer and the source electrode and having an opening portion for the semiconductor layer and the source electrode to contact, wherein a width of the opening portion is wider than a space of the gate region.

30. (New) A semiconductor device comprising:

a substrate having a first conductive type;

a drift region having the first conductive type and disposed on the substrate;

a channel region having a first conductive type and provided on the drift region;

a gate region provided so as to surround at least the channel region via an insulation film; and

a source region having a second conductive type different from the first conductive type, the source region being provided on the channel region and located substantially at a center of the channel region, and the source region being isolated from the insulation film,